

*Utah - The Story of Her People*  
*Winter*

Chapter 33

UTAH WATER PROBLEM

THE PROBLEM

When the white men first arrived on the sun-baked grounds of Utah, they knew nothing of the science of irrigation. The arid conditions of the Great West forced them to apply water to the soil before they could plow and plant their seeds. They came from a humid country where irrigation was not necessary; therefore, the water problem that confronted them was twofold. They had to learn how to irrigate their crops and how to utilize the limited amount of water to the best advantage of the people who were settling in Utah.

Numerous mountain streams flowed down through the canyons and out into the valleys during the spring and early summer. These water-courses were the determining factors in the location of the Utah settlements. Thousands of acres of good land lay in the confines of the Great Basin most of which was completely incapable of supporting human life had it not been for the high mountain ranges serving as watersheds for the winter snow.

The amount of water available was the most important factor in determining how much and which lands in Utah were farmed. Much fertile land remained uncultivated because of insufficient moisture. The problem that confronted the pioneers was not that of merely finding land to settle on. There was plenty of unoccupied country in Utah. The problem was to find land to which water could be applied with a minimum of effort and cost.

BRIEF HISTORY OF IRRIGATION

Up to the time of the coming of the Mormons to Utah in July, 1847, "there had been among Anglo-Saxon peoples no significant experience with irrigation," but it was not new to civilization. In fact, thousands of years ago irrigation had been carried on in ancient Persia, Syria,

Palestine, and the Mesopotamian countries. The Egyptian records state that Menes, the first Egyptian king, "extended greatly the irrigation structures of his day." He lived 5,000 years ago. The monuments of Babylon declare that in Abraham's time (2,000 B. C.) King Hammurabi "built a great and wonderful canal by which the desert was made into gardens, and an elaborate system of irrigation covered the Babylonian plain."

Irrigation on the American continent also goes back further than historical records. Early in the sixteenth century when the Spaniards first came to the New World, they found the natives watering their lands. Some of the canals which the Indians were using dated back to the first tradition of the native population. In Peru, Chile, and Argentina, remains of ancient irrigation structures existed comparable with the best that we have today. In fact, in some places stupendous irrigation canals may be traced—400 to 500 miles long—far beyond our modern attempts.

Seventy years before the English colony landed at Jamestown, the Spanish missionaries gained a foothold in the valley of the Rio Grande and continued the practice of the natives of applying water to the soil. In the desert wastes of North America, such as Arizona and New Mexico, irrigation was also practiced by the modern successors of the ancient Americans—the Indians, and the Spanish settlers.

But we must go to the Salt Lake Valley of Utah for the beginning of Anglo-Saxon irrigation in this country. The Mormons were the first among the Anglo-Saxon peoples to practice the art of irrigation on an extensive scale. They dug numerous canals, brought thousands of acres under cultivation, and developed permanent irrigation on a community scale; therefore, the Mormon pioneers possess the honor of having founded modern irrigation in America.

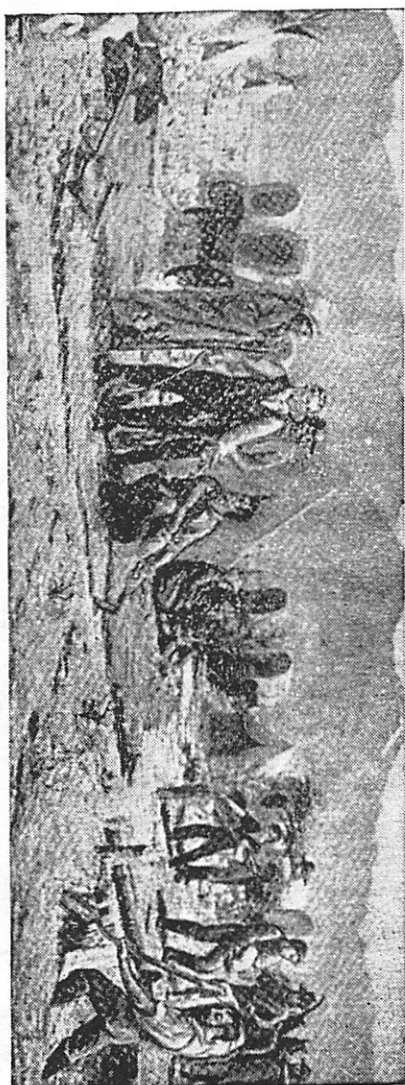
The founders of Utah had no preconceived ideas on irrigation, but the system that they developed was the natural result of trying to make a livelihood in a stubborn environment.



THE BEGINNING OF IRRIGATION IN UTAH, BY J. B. FAIRBANKS

258

## UTAH—THE STORY OF HER PEOPLE



THE BEGINNING OF IRRIGATION IN UTAH, BY J. B. FAIRBANKS



THE BEGINNING OF IRRIGATION IN UTAH, BY J. B. FAIRBANKS

wisdom for every colony to establish itself on the lands to which water could be easily and quickly diverted. Only by the method of cooperative work were the colonists able to survive. While some of the group plowed and fenced the farm lands, others threw dams across the streams of water and hastily constructed irrigation ditches, thereby bringing water upon the lands in the quickest and least laborious manner. The first irrigation ditches were, therefore, naturally small and built in the most accessible places.

But as the population increased the old ditches had to be enlarged, lengthened, their courses changed, and in many cases, new ditches had to be constructed. More in-liner systems such as high-line the population increased and as the settlement improved. Thus communities several small canals at ter to the many fields.

ve plan of building irrigation an did the amount of work acres of land which he intended or maintenance of the water the same basic principles. The to each individual was deter-work he had done in helping to l each farmer receiving benefit stem was required to do a pre-each year for the maintenance of e number of shares of water he re privileged to earn shares in or performed, or to join others t.

it Salt Lake in the fall of 1848, communities later, which placed igation water under the control ents of each ward, under the constructed ditches leading the in respective wards. The build-principal canals and ditches carrying water to ards was under the direction of the high coun-





THE BEGINNING OF IRRIGATION IN UTAH, BY J. B. FAIRBANKS

It has already been described how the vanguard company of pioneers had to irrigate the sun-baked ground before they could plow it. Thus the Utah pioneers began their experimentation in irrigation. They had to learn by the trial and error method the whole technique of farming under arid conditions. Through their ingenuity, added to a great deal of practical experience, they soon turned their experimentation into noteworthy accomplishments. The policies which they developed and the marked success with which they met the new conditions show the great foresight of those frontiersmen.

The early experiments in the Salt Lake Valley brought about an irrigation policy which served as a pattern for subsequent practice in all other Mormon colonies. In the words of Dr. Herbert E. Bolton:

"Irrigation was one of the signal contributions of the Mormons to the upbuilding of the Great West. Without it, starvation was as certain as death in old age, so the Mormons built reservoirs in the mountains, ran ditches and great canals across the valleys, and poured the life-giving waters of the Wasatch upon the thirsty soil of the sunbaked desert, causing it to bloom like the rose."

#### COOPERATION IN WATER UTILIZATION

In Salt Lake City as well as in the other new communities, the most pressing problem confronting the pioneers was that of providing food quickly. It was certainly

<sup>1</sup>Bolton, "The Mormons in the Opening of the Great West," *The Utah Genealogical and Historical Magazine*, XVII, 69.

wisdom for every colony to establish itself on the lands to which water could be easily and quickly diverted. Only by the method of cooperative work were the colonists able to survive. While some of the group plowed and fenced the farm lands, others threw dams across the streams of water and hastily constructed irrigation ditches, thereby bringing water upon the lands in the quickest and least laborious manner. The first irrigation ditches were, therefore, naturally small and built in the most accessible places.

But as the population increased the old ditches had to be enlarged, lengthened, their courses changed, and in many cases, new ditches had to be constructed. More intricate and expensive water systems such as high-line canals were made later as the population increased and as the economic position of the settlement improved. Thus in many of the Utah communities several small canals at different levels supply water to the many fields.

Under the cooperative plan of building irrigation ditches and canals, each man did the amount of work according to the number of acres of land which he intended to cultivate. The upkeep or maintenance of the water system was governed upon the same basic principles. The amount of water allotted to each individual was determined by the amount of work he had done in helping to construct the ditches, and each farmer receiving benefit under a certain water system was required to do a prescribed amount of work each year for the maintenance of the canals according to the number of shares of water he owned. Later settlers were privileged to earn shares in the old water ditch by labor performed, or to join others in a new irrigation project.

A plan was devised at Salt Lake in the fall of 1848, and adopted by the other communities later, which placed the management of the irrigation water under the control of the bishops. The residents of each ward, under the direction of their bishops, constructed ditches leading the water to each block in their respective wards. The building of the principal canals and ditches carrying water to all of the wards was under the direction of the high coun-

cil, who allotted the work out to the bishops, making them responsible for its completion.

Besides being the spiritual heads of the colonies, the bishops directed the construction of canals, the allotment of farm lands and water rights, as well as the building of bridges, churches, and forts, all of which were built by cooperative effort. Therefore, the bishops in early Utah history were very important factors in the Utah water system.

In the Utah communities, the small canyon streams were used by individuals or groups of individuals, but the larger streams necessitated the united efforts of a community, and the water was used as the main irrigation project of the entire settlement. Laterals or branch ditches were taken out of the main canal below the mouth of the canyon. These ditches were further divided until it came down to the ditch of the individual farmer. Through cooperative effort, all of these canals and ditches were constructed. Then the water was used in rotation, which gave a rather large stream of water to be used by each farmer once every several days.

Each year, early in the spring before the snow began to melt on the mountains thereby bringing to the valley streams of water, each community cooperatively cleaned and repaired all of their irrigation ditches. Every man was assessed his portion of labor according to the number of shares of water that he owned. The water-master took charge of this work. A committee estimated the cost of cleaning and repairing the canals. Then each man was notified as to his portion of the work which he was to do at a stipulated wage per man and team. Practically always the farmers did their own work and very little labor was hired.

From the beginning of Mormon history in Utah, canals, ditches, and water were owned by the water users. Therefore, not only the upkeep of the water system was carried by them, but the management of the irrigation companies was in their hands. They in turn elected officers, the most important of whom was the water-master.

Every irrigation project had its water-master, who,

if the system was large enough, devoted his full time to seeing that the water was fairly distributed. Some of his duties were to see that dams, head gates, and ditches were kept in proper order, and to notify each water-owner when to irrigate.

By 1869, according to a report to the Utah Legislature, the people of the State had constructed 215 canals of a total length of about 1,000 miles, at an estimated cost of \$1,700 per mile. The building of sub-ditches had cost almost as much as the main canals. Most of the water, which irrigated 167,000 acres of land, was cooperatively owned. The people of Utah had supplied the labor themselves to build the canals and reclaim the land. The canals were built by the farmers, owned by the farmers, and operated by the farmers. This achievement in Utah constitutes one of the greatest and most successful cooperative undertakings in the history of America.

#### SUMMARY AND CONCLUSION

The following factors have been pointed out in our discussion of the Utah water policy: all the ditches and canals were constructed cooperatively and own cooperatively; there were numerous small water companies in Utah, each of which had its water-master; there was a wide distribution of water which resulted in a thorough utilization of all the canyon streams.

In conclusion, it should be noted that the pioneer leaders, anticipating a large and compact population—just as many people as the mountain streams in Utah could support—early adopted the policy of prohibiting any one person from taking more water than he had immediate use for. Thus the Utah water policy was formulated to promote the welfare of the community in preference to that of the individual, and to insure a productive future for the people.

The water policy established by the founders of Utah persisted, and it still determines the distribution of water in our State today.